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ABSTRACT

This report discusses the outcomes of a study that investigated how visual media would affect the communication skills of a 13-year-old nonverbal girl with cerebral palsy and whether the use of visual media would provide documentation of higher cognitive functioning. For the study, the subject used three different tools to add visual information to her interactions: a videocamera, a digital camera, and a communication device that uses line drawing and has a dynamic display. Before and after the applications of the three tools, three types of information were selected to measure the effects of the visual media on the student's self-concept and communication: a self-concept inventory completed by the student, staff members, peers, and family members; anecdotal records of current and novel information the student communicated; and an SDS analysis of the anecdotal records. Linguistic analyses of those records were completed. Results found that access to visual media made a significant difference in the student's ability to communicate and that access to the control of the medium was important to her. The interactive nature of the visuals on the communication device appeared to engage her cognitively, and her perception of herself changed as a result of her access to visual media. Appendices include evaluation instruments. (Contains 78 references, 9 figures, and 6 tables.) (CR)

How does the use of visual media
affect a nonverbal student's communication?

by Mary T. Remmel Gehm

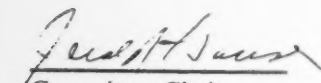
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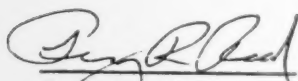
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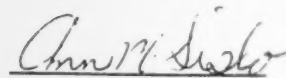
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Introduction

Traditional education in the United States is linguistic-based (Langer, 1991; Collins, 1993). Students identified as speech and/or language disabled demonstrate apparently reduced cognitive abilities through their inability to use language appropriately in grade level activities in this traditional system (Smagorinsky, 1994). However, some of these individuals demonstrate an ability to use other areas of cognition, such as logical-mathematical, interpersonal, spatial, bodily-kinesthetic, musical, interpersonal or intrapersonal intelligences, at significantly higher levels of cognitive functioning (Armstrong, 1993).

In their book, Whole Language Intervention for School Age Children, Norris and Hoffman (1993, p.2) state "that language is a process that involves complex whole-part relationships". Children refine their understanding of the relationships among different parts and larger wholes through contextualized learning. They state that the curriculum as well as intervention programs must involve a variety of processing systems, social interactions, real experiences, use of real and symbolic objects, pictures and sounds, and processes of drawing, prewriting, acting, singing, and movement.

In lower elementary school, various styles of learning are accepted as having equal value to spoken and/or written language. However, by third or fourth grade in the USA reading and writing begin to be the primary standards by which cognitive functioning is measured. Smagorinsky (1994) suggests that classroom acceptance of other methods of expression to demonstrate learning is negligible in traditional US schools. Therefore, students are expected to demonstrate their learning through reading and writing activities. For students identified as having a speech and language disability, and/or a learning disability, these cognitive processing areas are documented as significantly below their cognitive abilities by Multidisciplinary Team evaluations.

Armstrong (1993) explained that the different cognitive processes have separate systems for attention, perception, memory, and problem solving. He states that people have varying levels of ability in each area. According to Armstrong, demonstrating a disability in one cognitive area does not negate abilities in other areas. He suggests that individuals should focus on their strengths rather than their weaknesses. The construction of meaning through nonwritten texts such as graphic design or social interactions provide "the same potential for enabling the construction of meaning as written texts" (Smagorinsky, 1994, p. 29). Would measures of learning for an individual with a speech and language disability change, if other methods of cognitive processing were acknowledged as equal to written language?

Gardner (1991) in his research of multiple intelligence finds that schools that require text-based literacy limit legitimate means of expression. Smagorinsky (1994, p. 1) states that "students would benefit from having more flexibility in the media through which they express and develop their understanding of conceptual knowledge". If a nonverbal student with a stronger spatial style of learning had access to visual media, would communications change?

Students with speech and language disabilities have demonstrated that their use of visual media changes their ability to communicate. Students working with the photographer, Dian Slay in the Young Artists' Workshop (YAW) learn that there are no mistakes, just 'miss takes'. By reviewing their work, and focusing on their objective, Slay explains that a good photographer can capture the image which portrays exactly what she wants to express. Spatial configuration of signs which others perceive visually and to which they attribute meaning is called art (Smagorinsky, 1994).

Slay explains that individuals create photographic expressions of a statue because they have a cognitive ability spatially to communicate them. This author observed students working with Dian Slay during YAW (D. Slay, personal communications, 1993 - 1995). Although they could not talk or write about the concepts Slay wanted them to capture, individuals having physical and/or verbal disabilities, communicated 'the essence' or 'the striking contrasts' through the photographs they took, in response to Slay's editorial comments and questions.

For example, while looking at the initial photographs her students took, Slay asked: "How can you change this photograph to emphasize the degree of interference this has caused..." or "your job in taking this photograph is to capture the relationship of this new structure with the previously existing structures". Subsequent photographs increasingly demonstrated each individual's ability to convey the concepts. (D. Slay, personal communication, July 1994).

In the spring of 1995, this author monitored high school students labeled cognitively disabled, as they demonstrated an inability to communicate factual information about their vocational training to develop a portfolio by verbal or written means. However, when visual media were used, these same individuals were observed using factual information accurately, evaluating performances, discussing differences in perspectives, making choices based on opinions they had formed, planning and applying changes in job performances. "The ease and speed with which student interacted using time-delayed photographs and videotape recording media revealed that they were more actively involved. In addition, their performance improved, and they stated that they felt better about what they did." (M. T. Gehm, 1995, unpublished study.)

If, as Armstrong (1993) suggests, each area of intelligence has separate memory and storage resources, an individual who is strong in processing information spatially could use spatial cognition to process information rather than the more traditional linguistic area of intelligence. "Spatial intelligence refers to the ability to configure space and determine spatial patterns, as when architects design buildings..." (Smagorinsky, 1994, p.11). This framework would explain the significant differences in student performance in the portfolio project.

Armstrong (1993) also explains that an area of learning may or may not be well connected to other learning areas in each individual. Even if an individual learns at high levels of cognition by listening to spoken language, that same individual may not be able to express that high level of learning through reading and writing. "Interpersonal intelligence, used by effective teachers...involves understanding the moods and needs of other people." (Smagorinsky, 1994, p. 11)

But he or she may be able to express that learning by using a different cognitive process.

As a neuropsychologist, Gardner based his research concerning multiple intelligences in the physiology of brain structure (Armstrong, 1993). He further supported his theory by researching psychology and anthropology. He suggests that genetics and biological factors are shaped by the culture in which a person develops. His research of brain damaged individuals documents that although one area of intelligence may be damaged, other areas will function normally.

Armstrong (1993) basing his theory on Gardner's research, describes the theory of multiple intelligences as a model by which to understand learning. He discusses individual strengths and the capacity to bypass learning difficulties. For an individual who has a strength in spatial learning, visual media may provide better access to information than text, and involvement in production of graphics or the use of visual media may more adequately demonstrate cognitive ability than the production of text. "Most human activity involves some combination of intelligences; a painter, for instance, often must see into the human condition for inspiration, must arrange images through spatial intelligence, and must produce the images kinesthetically" (Smagorinsky, 1994, p. 12).

For educators and therapists providing interventions to improve learning outcomes for students with speech and/or language disabilities, the effects of Armstrong's research could be far reaching. The historical focus by special education on an individual's disability could be modified to focus on abilities, and educators would work with students to demonstrate learning by using their stronger areas of cognitive ability.

Shannon, a 13 year old nonverbal girl with cerebral palsy, who cannot read functionally or produce text provides an example of learning and expressing learning with different cognitive areas. She cannot express her thoughts verbally or in text forms because of muscles damaged by cerebral palsy. Standardized, formal assessments indicate Shannon has a moderate to severe cognitive delay (Multidisciplinary Team Report, 1994) indicating her cognitive ability to be between 2 years 4 months to 5 years of age.

However, functional assessments reveal that Shannon comprehends language at abstract cognitive levels used functionally by 7th to 9th graders (Gruenwald & Pollak, 1990). She comprehends such things as subtle syntactic relationships. Reporting about a dance she had attended, Shannon corrected an educator who described how she got to the dance. The young man she went to the dance with had not picked her up. Shannon had arranged to pick him up, and to take him home.

Shannon has also demonstrated the ability to accurately retell events across environments (with familiar communication partners) by verifying factual information and clarifying mistakes in others' recollections. (Multidisciplinary Team, 1995). When she was in 7th grade at Southern Door, her brother, who attended a different school, was in an accident. Shannon had not seen it. She heard about it afterward from others. Nevertheless, the next day at school Shannon communicated that her brother had been hit by a car while riding his bike, was taken to the hospital, and had a cast put on his finger. She was very concerned about him. When the staff checked, her facts were correct. Shannon guided the development of a communication board which she then used to help others understand what had happened to her brother. She retold the event, gave detailed information, and clarified misunderstandings again and again. The visual matrix she used is pictured below. The ratio of line drawings to text in this communication board provides an example of Shannon's strong preference to drawings instead of text (or graphic visualizations to letters).



Fig. 1 Communication Page Shannon used to explain her brother Ryan's accident.

As we looked through a variety of drawings Shannon selected the specific icons she felt were most accurate to use in her matrix. For example, she rejected all of the vehicle choices I provided until we came across a pickup truck, which had been the type of vehicle which had run into Ryan. She had not shared that information prior to her selection of the icon.

Unexpectedly during a group discussion a few weeks later, Shannon again demonstrated grave concern for her brother that no one in the group understood. Using her communication page in a reflective discussion Shannon explained her behavior. We talked about feelings students and staff members had had in situations similar to Shannon's, in an attempt to provide a context for her to explain her concerns. As others described their experiences with loved ones who had been in accidents, the group realized that Shannon was afraid her brother's finger could be cut off by the saw when the cast was removed. After a younger student explained how he had had a cast removed, Shannon was no longer preoccupied with concern for her brother.

Without appropriate visuals Shannon apparently used her 'intrapersonal intelligence...to look within to understand" herself (Smagorinsky, 1994, p. 11) and her interpersonal intelligence to interact with others to communicate her concerns. Norris and Hoffman (1993) describe how communicating information across environments and from a different perspective, forming opinions, conveying tense related information, etc. represent higher levels of cognitive functioning than naming or describing, whether they are part of functional, contextualized or more abstract, decontextualized information.

However, in the traditional, linguistically-based classroom Shannon's communications are often limited to yes/no and generic responses programmed on her communication device. There is not enough time to continuously design new overlays with appropriate icons, preprogram vocabulary into her device, train staff and Shannon in new vocabularies prior to each class. Language-based activities, therefore, provide a barrier to her interactions in the classroom.

To communicate in conversations and respond quickly Shannon uses manual communication methods such as sign language and gestures. Due to her physical limitations classmates and teachers are unable to understand her. She

also has communication pages, category rings, and her Touch Talker™ (Prentke-Romich, 1990), a personal, programmable, augmentative communication device that speaks with a synthesized voice when activated.

Functionally, however, vital current and novel information between the school and home is written in a notebook. Although ensuring continuous, accurate communication between home and school, this practice all but eliminates Shannon from the interaction. If she does offer news, it is checked with the notebook. That practice reduces her ability to communicate novel and/or current information, eliminates responsibility-building and diminishes her concept of herself as an independent person.

In her free time Shannon uses a personal portfolio, photographs, audio cassettes, and video tapes independently for information and entertainment. She also reflects on experiences with school staff and family members using these visual media forms. Family members, educators, therapists and associates who work closely with Shannon have related incidents that they felt Shannon communicated indicate higher levels of cognitive development to this author. However, appropriate documentation has been difficult.

Statement of the Problem

The question posed in this study was: With the demonstrated interest and apparent cognitive strength in visual media, could access to different types of visual media, and thereby to her spatial areas of learning, change Shannon's ability to communicate novel and/or current information, and provide documentation of interactions representing higher cognitive levels?

Definition of Terms

- | | |
|---------|---|
| access | equal opportunity, availability, and use by persons with identified learning differences (WI Assistive Technology Initiative (WATI), 1994). |
| compose | to construct meaning; to use an abstract symbol system to convey meaning (Smagorinsky, 1994). |

- communicate to transmit and/or receive a message from one person to another (Downing, 1988).
- communication analysis a functional assessment tool which rates three dimensions of a dialogue interaction: the situation, discourse, and semantics of language (Norris & Hoffman, 1993).
- communication partner person who has activities in common with Shannon, shared information and/or experience, and thereby also have a basis for natural, functional dialogue with her.
- contextualized refers to objects, actions, events, people, etc. present in a situation or conversation (Norris & Hoffman, 1993).
- device "assistive technology device - any item, piece of equipment, or product system...used to increase, maintain or improve the functional capabilities of children with disabilities" 20 U.S.C. 1401 (a) under the provisions of The Federal law, Individuals with Disabilities Education Act (IDEA).
- dedicated belonging to, customized for, and used for one purpose, as in dedicated augmentative communication device (WATI, 1994).
- decontextualized refers to objects, actions, events, people, etc. absent from a situation or dialogue (Norris & Hoffman, 1993).
- dimensions of self-concept significant aspects of a perception of a person, such as behavior, intelligence, appearance, anxiety, popularity, and happiness, in this study, from the Piers-Harris Children's' Self-Concept Scale.
- discourse context the social organization of a dialogue (Norris & Hoffman, 1993).
- erudite learned through academic or scientific exploration (Norris & Hoffman, 1993).
- experiential learned through concrete actions or experiences (Norris & Hoffman, 1993).
- expressive personal dialogue (Britton, 1982, as cited in Norris & Hoffman, 1993).
- modular brain a description of the human brain, compartmentalized; a model of human brain operation, which suggests that separate areas of the brain work separately or together to perform different tasks (Grandin, 1993).

- multiple intelligences a cognitive model in which human beings have at least seven different and distinct intelligences or styles of learning (Gardner, 1983).
- plasticity quality of a mechanism whereby one part can take over and compensate for a separate, different and/or damaged part of that mechanism (Huttenlocher, 1984, as cited in Grandin, 1996).
- poetic episodic information using narration, poetry, or dramatic form (Britton, 1982, as cited in Norris & Hoffman, 1993).
- semantic context the quality of the ideas responded to in a dialogue (Norris & Hoffman, 1993).
- situational context the level of cognitive organization existing within an interaction (Norris & Hoffman, 1993).
- Situation-Discourse-Semantic Communication Analysis a functional assessment tool which rates three dimensions of a dialogue interaction: the situation, discourse, and semantics of language (Norris & Hoffman, 1993).
- spatial intelligence the ability to perceive the visual-spatial world accurately and/or the capacity to perform transformations on one's initial perceptions" (Armstrong, 1993).
- symbolic continuum "a continuum with highly abstract and complex rule-governed symbol systems (spoken or written language) at one end and simplistic forms of representation (e.g. pictographs) at the other" (Bloom, 1970, as cited in Downing and Siegel-Causey, 1988, p. 338).
- symbols speech, sign language, pictographs, or other abstract systems, which may be used in the process of communication (Downing and Siegel-Causey, 1988).
- transactional the function of an interaction is to talk about factual information or instruction, using expository text structure (Britton, 1982, as cited in Norris & Hoffman, 1993).
- visualization visual imaging of a gestalt, independent of linguistic thinking: a) thinking of 'videotaped memories' of previous visual stimuli; b) implying a non-sequential process; or c) a cognitive process, similar to putting together a jig saw puzzle (Grandin, 1996).
- visual media spatial [or visual] transmission and reception of information by human, mechanical, photographic, videographic, computerized, or digital means, e.g. signs, pictures, photographs, diagrams, sign language, and videos.

Significance of the study

It is my sincere desire that therapists, educators and families will take a broader look at the various areas of intelligence as they are used to record group experiences. Visual media might stimulate mutual reflections or the context for more complex communications. Areas of cognitive development by which individuals can store and retrieve information more efficiently and communicate higher levels of cognitive functioning could be engaged.

Individuals would be encouraged to focus on their stronger, more accessible areas of cognitive processing, other than reading, their areas of strength rather than their weaknesses. Learning would be measured through cognitive strength rather than weakness. If these things are possible, the measures of learning for individuals who experience speech and language disabilities will improve. A nonverbal student who is a strong spatial learner could demonstrate learning through spatial processing in addition to using language. Positive effects on personal and social development and interpersonal communication of self-image by individuals with disabilities could occur as well.

Review of the Literature

Traditional education in the United States is linguistic-based (Langer, 1991; Collins, 1993). In recent years the scope of literacy in public elementary schools in the USA has been narrowed to mean text literacy or reading and writing. Authors from various academic areas argue that the text-only focus on literacy is too narrow. Reading specialists argue that other forms of literacy which children bring to school remain undiscovered, underdeveloped and unexpressed (Graves & Sunstein, 1992).

Each child brings their own history, genetics, traditions, cultural evolution, physicality, experience, intellect, and spirit with them. In addition, Braithwaite (1992, p. 151) suggests that people with disabilities have "certain unique communication characteristics not shared by...able-bodies individuals in a culture" and that we recognize that the perspective of the person with a disability is that of a different culture. The student involved in this study has a

physical disability and is nonverbal. She shows a decreasing interest in participation in linguistic-based activities in recent years.

In academic areas based on language, Braithwaite states that individuals with language-based disabilities depend on their weaker processes to demonstrate their learning. Repeated efforts to learn have a cumulative effect. Students with a positive self-image learn from mistakes, while students with a negative self-image, distressed by mistakes, flee and use counterproductive coping (Brooks, 1993).

In lower elementary public school classes various styles of learning, such as drawing, playing, and singing, are accepted as having value similar to spoken and/or written language. However, by third or fourth grade in the USA reading and writing begin to be the standards by which cognitive functioning is measured. By fourth grade Smagorinsky (1994) states that classroom acceptance of other methods to demonstrate learning is negligible in traditional, public education. Students are expected to demonstrate their learning through the highly valued reading and writing activities. Students who produce expected work in this manner are given higher grades than students who do not.

The Wisconsin School Inclusion Project is a collaborative effort among the WI Department of Public Instruction, universities, Cooperative Educational Service Agencies, school districts, and the parent Education Project. In the Spring of 1995 their Inclusion Report described different ways children with significant disabilities can "meaningfully participate in literacy activities with their non disabled peers" (Beloin & Brazeau, 1995, p. 11). They included drawing or finding pictures that represent ideas, peers recording others' ideas as they tell them what they are, making predictions, using context and picture clues, and relating stories to personal experiences.

Reading specialists are implementing individualized therapeutic methods, such as Reading Recovery, with children who have difficulty learning the reading process. When teaching reading and writing Clay (1991) stresses that a teacher must question her assumptions and observe what the children are actually doing. Teachers help each student through processing difficulties by guiding their cognitive strengths, questioning and interacting with them individually.

Armstrong (1993) suggests that demonstrating a disability in one intelligence area does not negate abilities in other areas. An assumption of sameness (being disabled in one way indicates an overall disability) is an erroneous pattern of human interaction repeated generation after generation. People familiar with only one style of learning often do not recognize or understand different styles of learning.

The syntax of nonlinguistic sign systems, such as visual literacy, provides a means for children with weak areas of linguistic intelligence, to "develop as symbol users" (Dyson, 1986, p. 800, as cited in Suhor, 1991, p.3) in areas such as describing microscopic images, paintings, and themes of novels, even if they are not able to use linguistic symbols. She gives examples of 'signs' as texts, gestures, pictures, musical notes, and mathematical signs and suggests that individuals learn symbols which suit the intelligences in which they are strong. Piaget (1970, pp. 45-56, as cited in Suhor, 1991, p.2) stated that "language is but one among...many aspects of the semiotic function...." Wertsch (1991, as cited in Smagorinsky, 1994) states that all cultures have developed symbol systems based on the styles of intelligence valued most highly.

Research into how high school students constructed meaning as they collaboratively designed functional models of living areas in architecture, interior design and equine management may help explain how this works functionally (Smagorinsky 1994). Students and staff interacted socially throughout the composition and described the processes they experienced using different types of media to compose their functional models. He states that such compositions "take shape through an increased understanding of concepts at the point of production" (Smagorinsky, 1994, p.16).

Temple Grandin (1996) an autistic individual with an identified disability in linguistic learning, implies a similar focus as she describes the brain as modular in design, having intact, but separate, intellectual compartments. She talks about thinking as visualizing. In order to comprehend linguistic relationships, such as a change in a relationship, Grandin visualized a door opening. She stated that it was the visualization that processed the meaning for her, not the language.

Modular systems in the brain work together or separately to do different things and compensate for deficits.

"New research findings indicate that verbal thought and visual thinking work via different brain systems" (Farah, 1989; Zeki, 1992, as cited in Grandin, 1996, p. 10). Zeki (1992) delineated four separate and parallel visual systems in the brain: one that interprets motion, one that sees color and two that identify form. In order to realize the relationship of cognition and levels of vision Farah (1990) concluded that scientific studies in computational modeling, cognitive psychology, neuropsychology, and neurophysiology, must collaborate.

Students identified as having speech and/or language disabilities or learning disabilities, and nonverbal individuals demonstrate apparent reduced cognitive ability through their inability to use language appropriately in grade level activities in the traditional linguistically-dependent public education system (Smagorinsky, 1994). Researchers, Norris and Hoffman (1993, p. 18) explain that "children who demonstrate difficulty with narrative thought and narrative language will exhibit more generalized difficulties with expository forms of thought and language". They have developed a three-dimensional model of language that quantifies the cognitive levels required to express the perspective of the speaker, the purpose of a communication, and the meaning intended.

Additionally, the physical situation and social context in which communications take place have significant impact on those communications (Jussim, 1991). In public school classes based on language, individuals with language-based disabilities depend on their weaker processes to demonstrate their learning within the social context of same-age peers. This factor is of particular significance for Shannon, who is physically disabled. Movement differences and diversity as described by Donnellan & Leary (1993) present additional explanations concerning misinterpreted or misunderstood communications, such as the unspoken messages of body language. Braithwaite (1992, p. 149) described "communication between able-bodied persons and persons with disabilities" as one of the most insidious social barriers.

Similar movements have different meanings in different cultures. Consequently, from different perspectives we can expect different interpretations.

How can public education appropriately and effectively interact with a physically disabled, and nonverbal student? Kangas and Lloyd (1988) stress appropriate cueing to elicit appropriate communications, engages the responsive interactions which are socially significant.

Naturalistic teaching strategies and functional communications increase the opportunity and desire to communicate. Miranda (1993) graphically describes the perception of individuals with multiple handicaps as dependent and needing help. In segregated classrooms and in communities such individuals were excluded from interactions with nondisabled peers until they could communicate appropriately. With the increasing use of various communication modes such as sign language in sporting activities, graphic signs on public roads, and tool bar symbols in software programs, varied communication methods are being accepted as appropriate.

Venn (1989, p.2) cautions that "modifications be no more restrictive than absolutely necessary... avoiding overprotection... to permit students with disabilities to take risks". As peer influence becomes more important to children who are becoming teenagers, there may be increasing value in accepting a variety of learning styles in pragmatic group interactions in contrast with a linguistic-dependent focus. Studies of the composition of nonwritten texts indicate that those texts may be more culturally appropriate for constructing meaning for some individuals, and can provide the same type of learning generally attributed to writing (Smagorinsky, 1994).

He used videotapes to record student behavior as they composed artistic texts in response to literature. In interviews students described the ways they used experiences, social interactions, unique qualities of dramatic or musical media and unique characteristics of the individuals. He concludes in each study "the students learned through the process of composing their texts.... a person's thinking shapes the text under production, and is simultaneously shaped by the process of producing the text" (Smagorinsky, 1994, p.22). For individuals of different cultures and those who also have language and/or learning disabilities, acceptance of different learning styles would provide additional cues to help them interpret such things as peer values, 'acceptable' behaviors, and emerging

peer culture transitions, building communication bridges, and providing insights into the different perspectives.

In discussing standardized and functional language evaluations Smagorinsky (1994) proposes the educational community use and accept a wide variety of symbol systems as comparable learning tools to printed text. Not doing so raises the question of equal access to learning for individuals of different cultures, values and intelligences. Wertsch (1991, as cited in Smagorinsky, 1994) agrees, stating that various cultures have developed different symbol systems expressing types of intelligence they value. Each system reflects all levels of cognitive thought.

Armstrong (1994b) describes how the growth paradigm in the Multiple Intelligence theory broadens the perspective of individuals with disabilities. These students can learn in varied real-life interactions with teachers who advocate positive solutions, alternate styles, technology or instructional strategies that translate to different learning strengths. He explains that the separate intelligences, such as linguistic, logical-mathematical, spatial, musical, bodily-kinesthetic, interpersonal, and intrapersonal, also called cognitive processes, have separate attention, perception, memory, and problem solving systems. People have varying levels of ability in each area. Students who explore the full range of learning styles develop resources, evaluate themselves as learners, and eventually as citizens. Some individuals demonstrate an ability to use other areas of cognition, such as spatial intelligence, at significantly higher levels of cognitive functioning (Armstrong, 1993).

Suhor (1991) suggests a greater potential to advance abilities through academics when curriculum is infused with a variety of sign systems, including linguistic, gestural, pictorial, musical and mathematical. Dickson (1985, p.37) focused on the potential for "juxtaposing symbol systems" so that they "contribute to the development of metacognitive awareness and higher-order problem-solving skills" (as cited by Suhor, 1991, p. 3). In recent years there has been a dramatic change in how reading experts perceive literacy. Many researchers recommend taking a broader approach to literacy, including such things as tape recordings, transcripts of oral narratives and art work with

traditional print. Graves & Sunstein (1992) described it simply as any way of collecting meaning for an individual.

Norris & Hoffman (1993) suggest that language be viewed in context, and that learners challenged by language, reading and writing require varied symbol systems that stimulate their different intelligences. The model they created analyzes communication interactions on a symbolic basis. It provides a three-dimensional analysis of knowledge conveyed through pragmatic language interactions. In effect, their procedure identifies and verifies higher levels of cognitive functioning quantifiably and undeniably. According to numerous authors including Gerber & Ginsberg (1990) individuals with disabilities who are successful, become adept at learning that is focused on their strengths and compensates for their weaknesses. In her study of gifted/learning disabled children, Baum (1990, p.3) focused on "development of strengths, interests and superior intellectual capacities... and a stimulating educational environment to circumvent problematic weaknesses... highlight abstract thinking and creative production". Kershner, Kirkpatrick, and McLaren (1995, p. 122) describe "compensating abilities" as one of the basic reasons for the success of the linguistically challenged individual they evaluated.

Audio-video technological tools may bypass disabled cognitive processing areas enabling an individual to access other cognitive areas which are intact. Assistive Technology Specialist, Charles Frame, stated that for individuals who cannot use linguistic symbol systems, access to technology is just beginning to translate to their various intelligences (C. Frame, personal communication, 1994).

LeGrice and Blampied (1988) discuss training pupils with intellectual disability to operate educational technology using video prompting as an effective strategy. In this author's public school and other professional experiences, the use of audio-video products for assignments is often misinterpreted as expressing minimal cognitive effort. As such those activities are not commonly accepted in school environments. But when accurately assessed the products of such interactions reveal a broad range of cognitive skills (Salomon, 1979, as cited in Suhor, 1991, p. 3). For some individuals this mode of expression can be a viable communication not only of effort but also as a tool for

reflection, evaluation and prediction, a means of recording and arranging data to convey their cognitive skills or a visualization of their comments through a juxtaposition of contrasting images.

In the Spring of 1995, this author observed high school students, labeled cognitively disabled, demonstrate an inability to communicate factual information about their vocational training by verbal or written means. However, when visual media were used, these same individuals were able to use factual information accurately, evaluate performances, discuss differences in perspectives, make choices based on opinions they formed, and plan and apply changes in job performances. The ease and speed with which students interacted with the visual (time-delayed photographs and videotape recordings) media revealed that they were much more actively involved, [their] performances improved, and [they] stated that they felt better about what they did" (Gehm, 1995, unpublished study).

Some individuals in this brief study were visibly changed. They became confident and assertive. They didn't look 'cognitively delayed' any longer. It was apparent that a positive, basic change had occurred in their concepts of themselves. Effects of self image on communications gain increased in significance as we realized that students with positive self-images learn from mistakes, while "students with a negative self-image are distressed by mistakes, flee, and use counterproductive coping" (Brooks, 1991, p. 28). Jussim (1991) promotes a model of relations between social perception and social reality that describes several ways social perception may relate to social reality. Some individuals with disabilities know different realities based upon the depth of experience shared with others in each environment. The importance of home and school interactions was raised by Hutchinson & Neuliep (1993) as they studied the apprehension in elementary school children.

Braithwaite (1992, p. 149) argues that people with disabilities have "certain unique communication characteristics not shared by... able-bodied individuals in a culture". Recognizing their perspective is that of a different culture, she advocates an intercultural perspective, assuming cognitive and communication abilities, while adjusting to each different delivery system.

Woodward (1994, p.64) states that "if children are to reach their ultimate potential as responsible, self-directed learners, it is important for them to feel that they are an integral part of the evaluation processes that occur...." They should participate in ways they feel comfortable. The 1991 Carnegie report, Turning Points: Preparing American Youth for the 21st Century, praises methods that utilize self-esteem strategy of providing responsibilities and helping make a contribution (as cited in Brooks, 1991, p. 91).

Classroom teachers deal with inclusion issues on a daily basis. Roberts & Zubrick (1992, p. 200) determined that "teachers' attitudes toward integration were not related to the social status of the students with disabilities. However, teacher and peer perceptions of academic behavior, and peer perceptions of disruptive behavior were found to be related to social status" for all students. Brooks (1991) argues that with ownership, investment in activity, student show increased motivation and choice, which facilitates self-discipline. They demonstrate increased ability to reason, make sound judgments, reflect, understand consequences, respect, and assume responsibility and accountability for actions.

Shannon's Communication History

When Shannon started to learn sign language in Kindergarten she responded more quickly both to sign language and to drawings of those signs than she did to letters of the alphabet. Since she was not able to sign with her right hand, Shannon created left handed gestures and taught them to others. Throughout her school career Shannon showed a preference to use visual things such as photographs, picture boards, and drawings of familiar sign language symbols. She used them to learn and to express herself rather than using printed words. She also shared personal photographs and videotapes to relate experiences, drawing upon her apparent strength in spatial intelligence.

Shannon started to use a Touch Talker™ (a computer-based dedicated communication device with multimeaning icons) to communicate in first grade. The Minspeak Interaction Education and Play™ software program in her Touch Talker™ increased visual cues through trademarked drawings indicating specific

vocabulary as well as categorical meanings. When a location or sequence of locations is depressed the device speaks the corresponding message in a synthesized voice.

The Minspeak Program™ was designed by Bruce Baker to enable many interpretations of the same drawings. Using icons in various combinations therefore, increases the number of verbalizations an individual can activate. For example, the apple icon can indicate the food category, or refer to the color red, or imply hunger, by supplying subliminal visual cues. (See the partial saliency hierarchy of icon usage below.)

1. primary meanings:

- a.  APPLE means *apple*
- b.  BOY means *boy*
- c.  SUN means *sun*

2. category membership:

- a.  APPLE is a *food*
- b.  BOY is a *person*
- c.  EYE is a *body part*

3. associated activities:

- a.  APPLE is to *eat*
- b.  SUN is to *shine*
- c.  BED is to *sleep*

4. salient characteristics:

- a.  APPLE is *red*
- b.  SUN is *hot*
- c.  BED is *soft*

Fig. 2. Partial saliency hierarchy of icon usage in Minspeak™. Getting Started Workbook, Prentke Romich Company, 1022 Heyl Road, Wooster, Ohio 44691 2/92cw

In first grade Shannon used Minspeak™ icons to name things, respond to questions, read books that were coded with matching icons, and began to sequence icon messages. The next school year Shannon transferred to a school closer to her home. Over the next three years a swallowing disorder was diagnosed and Shannon underwent surgeries to modify tightening leg muscles. There were many interruptions in her school career during that time.

Shannon returned to work with this author in the beginning of 5th grade. She continued to demonstrate significantly higher levels of cognition with the use of visuals (icons, drawings, pictures, signs, etc.) than with text. She had maintained her sign vocabulary and used it spontaneously. We attempted to resume using the Minspeak™ multimeaning icons as Shannon had used them in

first grade. But after six months it was determined that the Minspeak™ icon system was no longer appropriate for Shannon. At that time she demonstrated an ability to use line drawings most effectively.

Her Touch Talker™ was adapted by creating a generic overlay of line drawings that Shannon chose to replace the multimeaning icons. All messages on the overlay were available to her with one keystroke after the two symbol sequence was initiated. It provided Shannon with common communications she would need throughout her academic day. Frequent programming of more specific vocabulary proved too time consuming to be done during the academic day. Therefore, supplementary materials such as communication pages and category booklets using line drawings chosen by Shannon were developed to promote communication in specific classes and during community experiences. Refer to Fig. 1 to review the communication page created to facilitate Shannon's description of her brother's accident. More complex overlays were developed for special projects and occasions as Shannon was ready for them. Within two years she was using all of the available 128 locations on the device.

There was a significant difference in the information she gained and was able to use because of the different visuals. It appeared that changing the 'pictures' on her device to line drawings increased Shannon's interactions by providing a link to her spatial cognitive area. The change in icons also affected her self-concept. She communicated more often, more quickly, and more appropriately. Armstrong stated that cognitive levels could be measured through the use of different literacies. Perhaps increased access to additional visual tools could make additional changes for Shannon. During this study communication changes were documented during Shannon's use of different tools, called visual media to collect additional data concerning this observation. Also documented were the changes in her perception of herself and others' perceptions of her.

Methodology

This study was qualitative in nature. It focused on one student, Shannon, her perception of herself, others' perceptions of her, and the observed and recorded differences in her performance under three different treatments. In the

past this type of study has been done primarily by anthropologists who strive to understand people of different cultures (Fraenkel & Wallen, 1993).

In some ways Shannon represents two different cultures, that of individuals with physical handicaps and also those who are nonverbal (Venn, 1989). People from diverse cultures, such as these, represent the values and abilities of their cultures through their communications, customs, and learning styles. Because of the different cultures to which she belongs, Shannon learns in unique ways and expresses her learning differently from the physically-able, verbal culture in which she is educated. Education research, such as this, uses participation, observation and surveys in an attempt to portray the process, as well as the product of education.

The perceptions were measured through inventories completed by Shannon and the individuals directly involved with her in 7th grade, during the 1995-1996 school year. The five school staff members included an instructional aide, the language arts teacher, a special educator who worked with Shannon, the TEAM coach (homeroom teacher), and the principal of the middle school. The students who participated were the members of her TEAM, the middle school grouping system used to build appropriate social interaction and community involvement. Three family members with whom Shannon has frequent contact also contributed to the study.

The Piers-Harris Children's Self-Concept Scale (See Appendix A.) chosen to monitor changes in Shannon's self-concept during the study is currently used within the Southern Door County School District to evaluate student self-concept as part of an elementary-middle school reading program. Reading specialists at the school report that it has been effective in that application. The Piers-Harris has been used in many studies over the years to "evaluate an alternative intervention strategy... and monitor changes in self-concept over time" (Piers, 1984, p.3) as it was in this study. Developed in the 1960's the Piers-Harris Scale provides a quantitative "assessment of self-concept in children and adolescents" (Piers, 1984, p. 6).

The Third Person Revised Format of the Piers-Harris Children's Self-Concept Scale was copyrighted by Western Psychological Service (WPS) for one

year for the purposes of this study (See Appendix D.). It was completed by staff members, some of Shannon's peers, and her family members prior to and after the applications and used to compare their perceptions of her with her perception of herself. This version of the test provided a dimension that an individual service provider cannot perceive alone, but also one that is vital to change. There has been no statistical testing of this format.

During September of the 1995-96 school year and prior to the study, the statements on the original version of the survey were read to Shannon during a group meeting time. Training sessions emphasized that there were no right or wrong answers. Her classmates who voiced that concern were told that to achieve accurate results in the study, it was important that their responses reflect their feelings, which only they knew. They were also reassured that their statements would not affect Shannon in any way.

Shannon's silent thumbs up or thumbs down [yes or no] responses were recorded by the author while eleven of her seventh grade peers recorded their responses by circling yes or no on the response sheet. A number code was used to preserve anonymity. Three family members and five school staff members completed the Revised format individually prior to and after the study. Her father completed only the pre-study version. Therefore, those scores could not be included in the family statistics.

The second type of information consisted of anecdotal records of Shannon's current and/or novel communication. They were recorded by school staff on Communication Checklists (See Appendix B.) prior to and throughout the study. Designed to simplify the recording task, the Checklist content was based on the Situation- Discourse-Semantic Model (SDS) of language analysis (Norris & Hoffman, 1993). Shannon's mother and staff members were trained individually to report their communication experiences with Shannon on the Checklist. The importance of accuracy was stressed as they described the situation, listed the topic of conversation, explained the purpose of the interaction, and interpreted the meaning.

Shannon's mother is the primary family resource available to school personnel. Initially she was encouraged to complete the checklists after

discussions about interactions with Shannon. However, it became apparent that verbal discussion continued to be the preferred method of communication, as it had been throughout Shannon's previous years in school. Therefore, in an effort to include family anecdotes in the study, Communication Checklists were completed by the author, with the collaboration of the classroom teacher, M.E. Kovaleski. However, it should be noted that since the reporter was a secondary source, there is an increased possibility of misinformation and reduced reporter-analyzer objectivity with this method of record keeping.

The third type of information came from the SDS analysis (Norris & Hoffman, 1993) of the anecdotal records (See Appendix C.). All of the completed records were analyzed by the author, a speech and language pathologist. Those analyses provide a functional assessment of the communication levels that Shannon used throughout the study.

The characteristics of each dialogue, or Situational Context, were analyzed first. Secondly the function of the discourse was rated in the Discourse Context. It is within the contexts of that information that the actual meaning of language, concepts, ideas or the Semantic Context was assessed (Norris & Hoffman, 1993).

The aide who worked with Shannon daily completed a Checklist on 10/4/95. It provides a sample of the process used in this study. She reported the following: "I spoke with Shannon in the classroom. We were reviewing the menu before lunch." [Due to her swallowing disorder the lunch menu was reviewed with Shannon daily so that she was prepared to indicate quickly which foods she would be able to eat while going through the buffet line.] "When I asked her if I could have her chocolate cake, she used her communication device to say, 'You're in big trouble'."

The origin of that message provides the reader an insight into Shannon's personality. Within peer group activities, such as TEAM TIME, Shannon was passive, seldom interacting spontaneously or independently. She had to be encouraged even to make a positive comment to them. In an effort to help her become more actively involved with her peers this author asked Shannon and her peers in a TEAM meeting for vocabulary suggestions. They obliged. Shannon acknowledged the comments politely although she was apparently not

comfortable with their suggestions. Shannon agreed to have me program them into her device, but she did not use them.

When her mother was asked for she had suggestions that Shannon would be comfortable with using to talk with her peers, she demonstrated how Shannon shook her finger at her 16 year old brother, Ryan, whenever she doesn't like what he's doing. That meant her brother was 'in Big Trouble'. Shannon agreed whole heartedly. We found an icon of a finger, shaking and programmed a location on her overlay to say "You're in Big Trouble!" After some guided practice Shannon used the expression spontaneously and independently with her peers and the staff who worked with her, as in this example.

To start the analysis of the communication which the aide had reported, the Level of the Situation Context was determined first. Refer to Appendix C to review the three Contexts and the levels within each Context of the SDS Model (Norris & Hoffman, 1993). Since the topic in this communication was created purely through language, it indicates Shannon has a mental representation of her own experiences in the situation. That ranks the communication as Decontextualized, Egocentric, Level VI. Because of Shannon's warning that the aide would 'be in trouble' if she took the step she had implied [ate her cake] the Discourse Context (function of the communication) is a Level VI, Complete. And the judgmental response by Shannon places the Semantic Context (meaning intended) at the Evaluative Level VI.

Shannon also used behavior as an effective communication tool at times, as does a verbal, physically normal individual. Some of those behaviors were misinterpreted initially as Shannon's lack of understanding or her inability to process the information by members of the staff and her peer group. Since those types of misunderstandings can contribute to diminished responsibility and independence some behavioral communications were reported as well.

During the last month of the school year, Shannon completed the Piers-Harris Survey by indicating her responses once again after I read the statements to her. The same groups of eleven seventh grade peers, four family members, and five school staff members used the Third Person Revised Format of the Piers-Harris to record their perceptions of Shannon at that time. Shannon's 16 year old

brother, Ryan, completed the post-study survey as well. Unfortunately, he had not completed the pre-study survey. Therefore, his ratings could not be included in the family statistics.

For this study Shannon used three different tools to add visual information to her interactions: a videocamera, a digital camera, and a communication device that uses line drawings and has a dynamic display. A timeline of the study follows.

Table 1

Timeline of the Study

	A	B	C	D	E	F	G	H	I	J	K	L
1		Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Until Mar. 15	After Mar. 15	April	May	June
2	PH Survey	x										x
3	Checklist training	x										
4	Checklists submitted		x	x	x	x	x	x	x	x	x	x
5	Soni Handicam		x	x	x							
6	Apple Quicktake					x	x	x				
7	Dynavox Device								x	x	x	

Procedures

Before and after the applications of the three tools, three types of information were collected to measure the effects of the visual media on Shannon's self-concept and her communications. 1) A self-concept inventory was completed by Shannon and a third person version of that inventory was completed by seven school staff members, eleven peers and three family members. 2) Anecdotal records of current and novel information Shannon communicated was completed by the staff and by one family member. 3) Linguistic analyses of those records was completed.

An annual goal for Shannon is to convey current and/or novel information, at the highest, appropriate, cognitive level which she can use. This goal was created by the school's multidisciplinary team in charge of Shannon's educational plan. Therefore, during the applications data was gathered to

measure changes in this behavior. The staff began to keep records on the Communication Checklist forms in the two months prior to the study and continued during the three subsequent time periods when each tool was used. To quantify the levels of language Shannon used functionally The S-D-S analysis was completed by the author, a Speech and Language Pathologist for each record submitted.

During the second quarter (October through December, 1995) Shannon used the first tool, a Soni Handicam SC5 videocamera, mounted on her wheelchair with a Bogen monopod artificial arm to videotape various activities. Initial training with that videocamera was done the summer before during YAW. In October Shannon was trained to videotape a seated individual while he worked at a computer and talked to the instructor, to change the focus by zooming in and out slowly, and to accurately monitor small group activities.

The artificial arm stabilized the videocamera in an appropriate position for Shannon to use the rear facing 2" X 2" display to frame her subjects appropriately and to monitor the videotaping independently. The purpose of each videotape session was discussed prior to the activity. After she became comfortable with videotaping, Shannon decided how she wanted to record, from where, and for how long. Due to the placement of the on-off switch, Shannon required assistance in that task.

In the third quarter (January to March 15, 1996) Shannon was able to use the QuickTake 150, a digital camera by Apple Computer, Inc., the second tool. This camera takes individual pictures digitally, which can then be manipulated on a computer. Shannon had learned to use this camera at YAW the previous summer also. She had used the computer generated pictures as individual photographs and had included some of them in a computer generated report which she directed.

The same guidelines were maintained in terms of Shannon's preparation for taking the pictures. She was expected to determine how she wanted to take them, from where, and how many pictures to take. There were several accessibility differences with this second application. Since the Bogen Arm mounting system was unavailable at the time it was used, this camera had to be

held by someone for Shannon. Because of the size of the viewer and the placement of the shutter, she also had to stop looking at her subject in order to take the picture. The resultant inaccessibility and dependence contributed to Shannon's limited participation during this segment of the study. Factors affecting accessibility and independence may limit the use of visual media in a similar study.

In the fourth and final quarter of the school year (March 15 - June 6, 1996) Shannon replaced her modified augmentative communication device with a Dynavox[®], as the third tool. A Dynavox[®] is a computer-based augmentative communication device, with a black and white dynamic display. Shannon was familiar with Dynasyms[®], the line drawings used on the Dynavox[®]. They had been used in previous communication setups in preparation for the device trial. She had also been taught to search through a number of different pages to locate the one she needed. This task simulated accessing screens available to her on the dynamic screen. Therefore, the training Shannon required to use the actual device was minimal.

Results

The results from the pre- and post- study Piers-Harris Survey, the Third Person version surveys of that test, and the SDS analysis of Shannon's communications throughout the study are described below in text and chart form. The discussion of Shannon's interactions during her use of a Soni Handicam videotape camera, an Apple QuickTake 150, digital camera, and a Dynavox[®] as well as the conclusions made from the study will be addressed in the next section of this report.

The Piers-Harris Survey was used here as a research tool while evaluating an alternative learning strategy for a culturally different learner. The procedure recommended for completing narrative report or interpretation of the Piers-Harris described in the manual, was followed carefully to insure the highest possible accuracy.

The authors indicate the total score is the best indicator of an overall level of self-concept (Piers, 1984). The T-score equivalents are the standardized

equivalents of the total scores. The T-Score Ranges and Descriptors are listed in Table 2 of the manual. Shannon's T-scores of 40 on the pre-study survey, and 41 on the post-study survey, place her perception of herself at one standard deviation below the mean, described as 'slightly below average'.

Her low perception of her behavior in the pre-study survey is significant at the .05 level. In direct contrast, Shannon's high self-concept in terms of her appearance, is significant at the .01 level. Before the study, Shannon believed she looked very good, but behaved badly. After the study, her scores were within the average range, and were more closely aligned with her peers.

On the Third Person format of the Piers-Harris the averaged total scores of the group surveys were converted to T-score equivalents. Those scores are listed in numeric order with Shannon's T-scores in Table 1 below. There is no established standardized criteria with regard to the Third Person Version of the Piers-Harris. However, when the differences in Shannon's self image and the images these different groups have of her are displayed, it is clear that each group perceives Shannon in significantly different ways. The different groups see her as 'slightly below average', 'average' and 'above average'.

Table 2.
Comparison of T-Score Equivalents

Group	Pre-Study	Post-Study	Description
Female Family	63	62	above average
Peers	52	46	average
Staff	51	48	average
Shannon	40	41	slightly below average

Source: Piers-Harris Children's Self-Concept Scale, 1983, WPS. [The comparison of family, staff and peer group perceptions displayed with descriptors is not standardized.]

These images remained the same from the beginning of the study to the end of the study, with numerous fluctuations in individual responses and total scores within each of the six dimensions of self-concept, as defined by the Piers-Harris Children's Scale. This nonstandardized use of data provides a comparison of the

different groups' perceptions of Shannon with Shannon's perception of herself, something one examiner cannot do alone.

Noteworthy is the fact that female family members maintained their perception of Shannon as 'above average' while peers and staff members maintained theirs as 'average'. Although the scores indicating the group perceptions decreased, the descriptions did not change. Shannon's post-study score increased slightly. Note also, in Table 3 below, that Shannon's perception of herself is most closely aligned with the scores of the two male members of her family, as 'slightly below average'. They did not complete both surveys and could not be included in the family totals in the previous comparison.

Table 3
Comparison of Shannon's T-Scores with the male family members' T-scores with descriptors.

Group	Pre-Study	Post-Study	Description
Shannon	40	41	slightly below average
Male Family	40	42	slightly below average

To address patterns of strength and vulnerability in an individual a comparison of the stanine deviations was completed as well, from the mean of the total scores of each of the six cluster scales (referred to in this study as the dimensions of self-concept). It is the difference between each stanine score from the mean stanine which determines the level of significance (Piers-Harris manual). Since the standardized criteria were met with regard to Shannon's surveys, her scores are considered reliable. The dimensions of self-concept used in this study include: behavior, intelligence, appearance, anxiety, popularity, and happiness. Fig. 3 below shows Shannon's pre- and post- application perceptions of her own strengths and vulnerabilities.

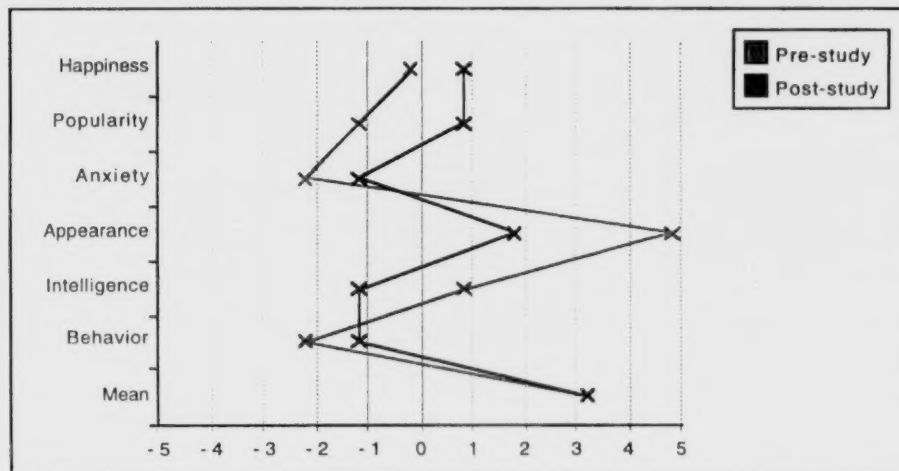


Fig. 3 Shannon's pre- and post-application perceptions of her own strengths and vulnerabilities, using stanine deviations. Source: Piers-Harris Children's Self-Concept Scale, 1983, WPS.

In academic situations researchers stress the point that the perceptions of peers and staff have a direct effect on the individual. Therefore, it is valuable to observe differences in the group perceptions of Shannon's of strengths and vulnerabilities with her own perceptions. The Third Person format of the Piers-Harris Children's Self-Concept Survey was designed to make such comparisons. In Figure 4 below the juxtaposed data displays the degree of difference in a comparison of those perceptions.

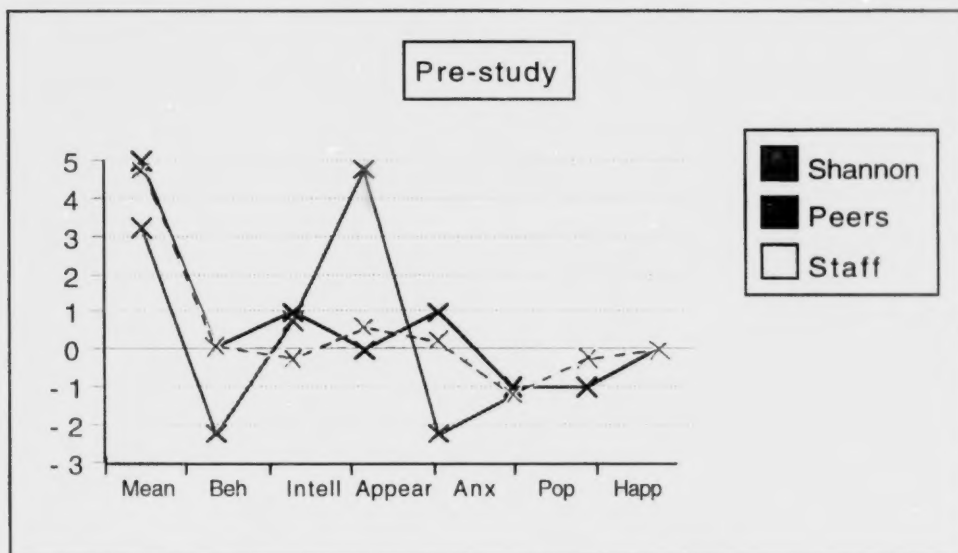


Fig. 4 Comparison of Shannon's pre- application strengths and vulnerabilities, using stanine deviations, with collective staff and peer groups perceptions, using stanine deviations.

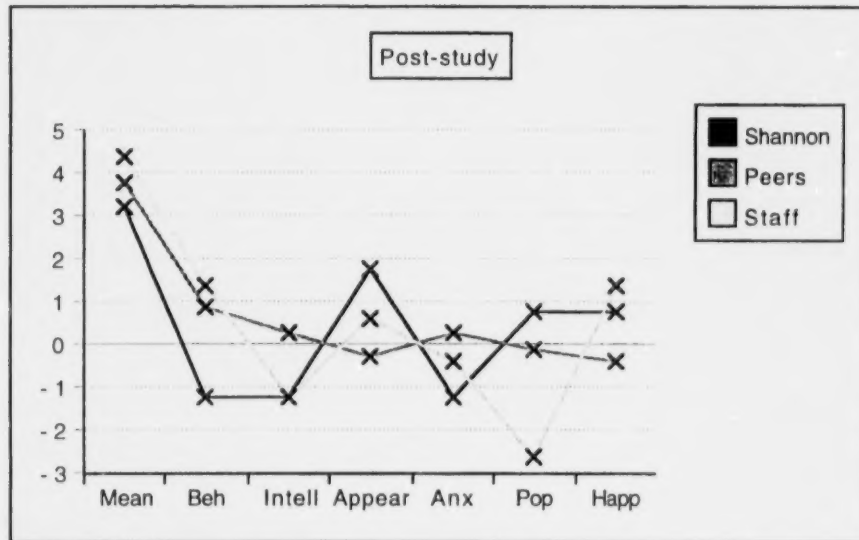


Fig. 5 Comparison of Shannon's post- application strengths and vulnerabilities, using stanine deviations, with collective staff and peer groups perceptions, using stanine deviations.

There is no established standardization for the comparison of an individual's dimensions of self-concept with group scores. It is this author's suggested use of the information regarding this study in alternative programming for one student's learning. Statistical significance is not implied.

Note the changes in Shannon's perceptions of her own behavior, appearance, and anxiety. In effect, there was a normalizing of her perceptions of herself from the beginning to the end of the study.

Documentation cited earlier from a Multidisciplinary Team Report, explained that the use of the SDS Model documented Shannon's use of higher levels of cognition, which are undetected through standard testing procedures. Staff members began to keep records on the Communication Checklist forms in the two months prior to the study and continued during the three subsequent time periods when each tool was used.

They appeared to be uncomfortable with the Checklists. Staff members consistently reviewed their interactions with this author before completing them. Initially, staff members used the checklists to focus on their positive attitude, evaluate their interactions, explain their verbalizations, define their purpose, or get reassurance of their job well done. However, those who used them regularly

became desensitized to this reaction, and checklists became increasingly descriptive of Shannon's communications.

Communication Checklists were recorded during conversations with Shannon's mother at school as well. She is the primary family resource available to school personnel. Initially she was encouraged to complete the checklists after discussions about interactions with Shannon. However, it became apparent that verbal discussion continued to be the preferred method of communication, as it had been throughout Shannon's previous years in school. Therefore, in an effort to include family anecdotes in the study, Communication Checklists were completed by the author, with the collaboration of the classroom teacher, M.E. Kovaleski. However, it should be noted that since the reporter was a secondary source, there is an increased possibility of misinformation and reduced reporter-analyzer objectivity with this method of record keeping.

The information on the Communication Checklists was analyzed using Norris & Hoffman's 1993 SDS Model. Each dialogue was rated using the three contexts of functional language development: cognitive organization, discourse context, and semantic context. Cognitive organization determines which of the 10 levels cognitive thought was required in order for Shannon to have the perspective she used in the dialogue. The discourse continuum explains which of the 8 levels of cognitive understanding was required for Shannon to communicate the function of each dialogue. The semantic continuum indicates which of the 7 levels of meaningful thought Shannon used in the communication.

The comparison of linguistic contexts used by Shannon throughout the study document her use of a wide range of cognition levels. Tables 4, 5, and 6 below, provide a visual comparison of the levels of Cognitive Organization, Discourse Context, and Semantic Context Shannon used in communications reported by her mother.

Table 4
Cognitive Organization Levels, reported by Shannon's Mother.

Levels	Description	one dialogue	two dialogues	three dialogues
X	Logical			
IX	Symbolic	X		
VIII	Relational	X	X	X
VII	Decentered			
VI	Egocentered			
V	Logical			
IV	Symbolic	X		
III	Relational	X		
II	Decentered	X		
I	Egocentered			

Table 5
Discourse Context Levels, reported by Shannon's Mother.

Levels	Description	one dialogue	two dialogues	three dialogues
VIII	Interactive			
VII	Complex			
VI	Complete	X	X	
V	Abbreviated	X	X	
IV	Reactive	X		
III	Ordered			
II	Descriptive	X		
I	Collection	X		

Table 6
Semantic Context Levels, reported by Shannon's Mother.

Levels	Description	one dialogue	two dialogues	three dialogues
VII	Metalinguistic			
VI	Evaluation	X	X	X
V	Inference	X		
IV	Interpretation			
III	Description	X	X	
II	Labelling			
I	Indication	X		

The analyses of the checklists which staff members submitted are presented in Figures 6, 7, and 8 below. Fig. 6 shows the Cognitive Organization Levels, Fig. 7 the Discourse Context Levels, and Fig 8, the Semantic Context Levels Shannon used prior to and during each application in the study. Series 1 was the pre-application, Series 2, the videocamera, Series 3, the digital camera, and Series 4, the Dynavox^R.

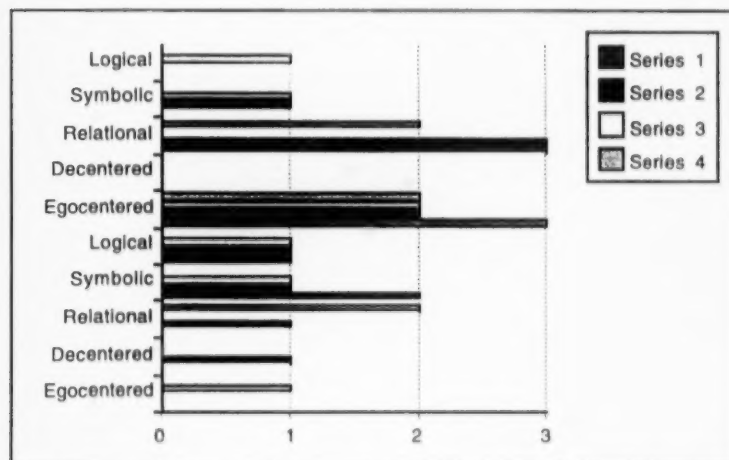


Fig. 6 Cognitive Organization Levels used by Shannon prior to and during the study by staff members.

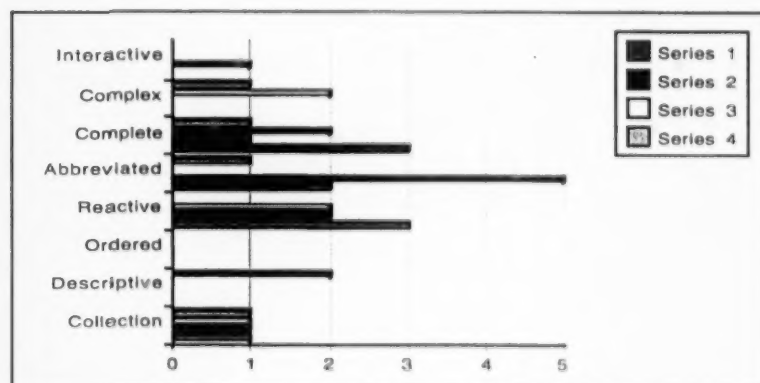


Fig. 7 Discourse Context Levels, used by Shannon prior to and during the study by staff members.

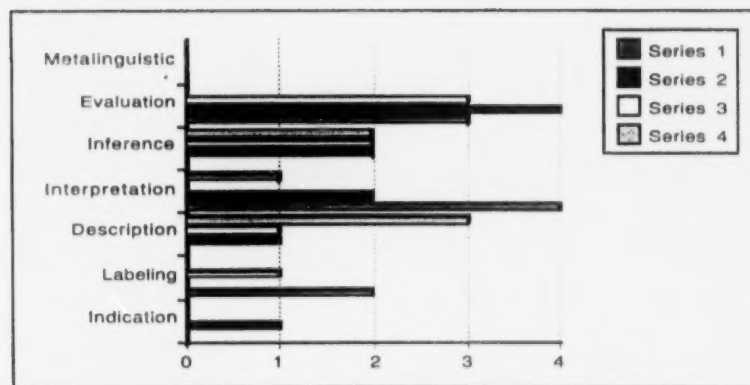


Fig. 8 Semantic Context Levels, used by Shannon prior to and during the study by staff members.

Some staff members were observed using the information gained from the communication checklists and consequent verbal discussion process as an additional gauge by which to understand Shannon's communications, as the study progressed.

Discussion

The following discussion will include Shannon's use of each tool during the 95-96 school year: the Soni Handicam, a Videocamera; the Apple QuickTake 150, a digital camera; and the Dynavox[®], an augmentative communication device. Each visual medium contributed in a different way to the heightened levels of cognition expected from Shannon by those staff members. It will focus on the differences in her communications and interactions while using these tools.

Two questions were asked in the study. First, would the use of visual media would change Shannon's ability to communicate? Secondly, would the use of visual media provide documentation of higher cognitive functioning?

The way in which one interacts with a variety of visual media such as videotapes, digital photography, and an augmentative communication device with a dynamic display would be different because of the differences from one medium to another. Consequently, the cognitive involvement for Shannon was

different with each one. The results of those interactions are compared qualitatively, with emphasis placed on the differences observed in Shannon's communications and some behavioral interactions.

It was initially difficult to involve each visual medium transparently in classroom activities. Although eager to use the medium, Shannon appeared uncomfortable using the first tool, the videocamera in November. However, as the staff found more meaningful ways to use videotaping as an integral part of class interactions, Shannon became more engaged in the activities. By the time she videotaped her classmates as 'Santa's elves being interviewed in the workshop' the increased responsiveness to one another reflected Shannon's increased cognitive involvement. Used to record such group experiences, the video cues stimulated mutual reflections and provided the context for complex communications otherwise inaccessible to Shannon. It was the engagement of and the interaction with her areas of spatial cognition that were significant to Shannon in this study.

Gardner defined at least seven different areas of cognition by which individuals can store and retrieve information efficiently: linguistic, logical-mathematical, spatial, kinesthetic, musical, interpersonal and intrapersonal. And Thomas Armstrong explained that different individuals can communicate through each of these different intelligences at all levels of cognitive functioning. He also explained that different connections between areas of cognition affect communications within an individual and among separate individuals in different ways. The engagement of Shannon's area of spatial cognition apparently contributed to her more active interactions as the use of the videocamera became more transparent (more clearly a part of the classroom interaction).

With the second tool, the Apple QuickTake digital camera, Shannon demonstrated a choice not to use it. Communication checklists reported during this time period showed diminished interactions, recognized by this author as misconduct. What staff members initially excused as indifference or questioned as a mental disability, was also an effective, albeit inappropriate strategy, to communicate a significant change in Shannon's personal development. She had decided not to use the digital camera.

On February 20, 1996, a small group took time for a reflective discussion. Shannon indicated that she did not want to take any more pictures or manipulate them on the computer. She also said that she didn't want pictures being taken of her. Shannon said that she would rather be with her peers, cleaning out their lockers.

Although some staff members interpreted Shannon's statements purely as oppositional behavior, it was also accurate to conclude that Shannon had evaluated her situation, considered the results of the interactions, and chose to participate with her peers rather than with her therapist, an adult. For this author, Shannon's statement had clarified her recent noncompliant behavior. It was not until I had given her the linguistic format and the framework of a reflective discussion that she was able to communicate her feelings. By doing that, in essence, I gave her not only a means to communicate those feelings, but also permission to tell me what she thought. And she did. [The reader is referred to the origin of the expression "You're in Big Trouble" in this report.]

This novel communication had not been anticipated. Therefore, Shannon had not had a way to express her feelings, other than behavior. Through that behavior she communicated an independent, cognitive choice, as well as an excellent example of teenage behavior.

To this therapist, it also meant that she had increased the challenge of transparent group interaction with visual media. Although numerous strategies were attempted, Shannon refused all interactions with the digital camera. There are no results to report concerning the use of that tool. It is an important aspect of personal development that an oppositional interaction such as this, as well as compliant interactions, be recognized as a measure of cognitive growth. It is especially significant because of the inaccurate interpretations which are plausible from the different perspectives of communication partners.

It was during this time period that Shannon decided to ignore a greeting from her Team Leader. Earlier in the school year the teacher would have dismissed Shannon's behavior as 'how she is sometimes'. However, having used the communication checklists and the discussion process with Shannon, the Team Leader chose not to dismiss the incident as unintentional, and did not accept the

behavior as part of her disability. She pursued Shannon, who by that time was in high gear, avoiding the confrontation. Shannon reluctantly admitted that she had chosen to ignore the Team Leader, and that she had also chosen to take her time eating chocolate cake rather than go to a Team meeting. After an age-appropriate explanation of her responsibilities, Shannon chose not to use that same communication strategy with the Team Leader again.

If Shannon is to develop communication strategies to increase her independence throughout her life, she will make some choices for which she will experience negative consequences. It was the opportunity to reject that visual medium, rather than to participate in language-based activities, an identified area of weakness, by which Shannon demonstrated cognitive growth. Compared to her compliant acceptance of peer vocabulary suggestions mentioned earlier, this behavior represented an assertive and independent decision.

During the same time period Shannon also received a detention, as every other middle school student would for noncompliant behavior. A staff member, not involved with Shannon, reported that he had dreamt about her in the detention area. He verbally expressed the realization that there had not been any mistreatment. But he also stated that "he still felt sorry for her". If the future for Shannon is to contain any independence, other people must learn to expect and accept the decisions she makes as her choices, and be willing to help her experience real consequences through those situations. If that staff member had been involved with Shannon's use of visual media, one wonders how different his reactions might have been.

Shannon's response to the third tool, the Dynavox^R, a dedicated augmentative communication device, provided a different type of interaction with visual media, in which she chose to participate actively. She had been using the modified Touch TalkerTM containing 109 line drawings to communicate functionally with familiar people.

The differences between her personal communication device and this one were numerous. The screen was lighted. She controlled the brightness. The number of locations which she could activate (use to speak) were unlimited. The size and number of Dynasym^R icons and their arrangement on the screen could

be varied. Shannon could scroll through a minimum of 2,500 choices. Icons that indicated activity moved. Locations spoke messages when she touched them. Many locations took her to another screen entirely (a file icon at the first location indicated a link to another screen). A category of choices she had just thought about appeared, or a different area of conversation reflecting her mental shift was accessed as a completely new screen of icons appeared. In a separate display area at the top edge of the screen related comments appeared in text form, which she could also activate.

Within the 5-week trial period of the Dynavox^R, Shannon effectively used 17 different screens (each of which contained 12 - 54 icons) with 73 separate links to other screens (424 total separate locations) on the Dynavox^R device.

Another significant contrast was the streamlined programming on the Dynavox^R. Because of this difference the classroom teacher was comfortable doing the majority of the programming and training. Shannon was involved in deciding which screens to create, selecting drawings and vocabulary terms, and in creating specific messages spoken. The special educator's increased ownership contributed to the facility with which Shannon was guided in the use of the Dynavox^R with familiar and unfamiliar communication partners, in a variety of environments including the telephone throughout the school day.

The day she was introduced to the health screen, pictured below in Fig. 8, Shannon dramatically demonstrated a subtle application of a double word meaning. Shannon had used the generic term 'sick' many times in the past to avoid doing something she considered undesirable. In an effort to have her express her feelings more accurately, the 'health screen' was designed to include feelings, that could be interpreted physically as well as emotionally. "Something is pinching me" or "I'm not comfortable" could be linked to other screens that displayed specific body parts, sensory explanations, positioning information, expressions of emotion, etc.

Verbal Cues listed by Row.
Messages directly under that.

Row 1.

1 page label
2 sick 'n tired
3 excuse me
4 Let me tell you what I need

5 My belly feels weird. Thanks
6 It's cramps again. Thank you
7 I'll try to forget about it.
8 OK, I'll try.
9 yes
yes

Row 2

1 Something's pinching me.
2 I've got a grundy.
3 I'm not comfortable.
4 I'm not sitting right in my chair.
5 I can't find...
6 I've looked all over.

7 my glasses
8 my braces
9 I have a sore spot.
10 Is anybody else cold?
11 It's freezing in here!
12 I have a headache.
13 I take 2 Tylenol/4 hrs.
14 The release is on file.

15 I'd like to go take a nap.
16 This sucks, let's go home.
17 I'll do it later.
18 Come on, I'll do it later.

Row 3

1 I'm sitting funny.
2 I'm not back far enough.
3 I'll get it myself.
4 Let me do it!
5 Can you get...
6 I can't do it.
7 my tray
8 it's over there

9 my pills
10 I take 2 at 1:00
11 My throat...
12 It doesn't feel right
13 I can't eat that.
14 I can't swallow it.
15 I really don't feel good.
16 I'm gonna barf. YUK!

9-go to master screen.

Row 4

1 No
2 I ...help in the bathroom.
3 I've really got to go now.
4 Let... tell you how I feel.
5 link to feelings
6 I'll tell you...
7 link to body parts

8 Look at my chair.
9 It's not working.
10 I use this device to talk.
11 I can't say sounds like I want so.
12 It helps me tell you how I feel.
13 Forget it! NO!
14 I'm gonna explode.

15 clear key
16 please

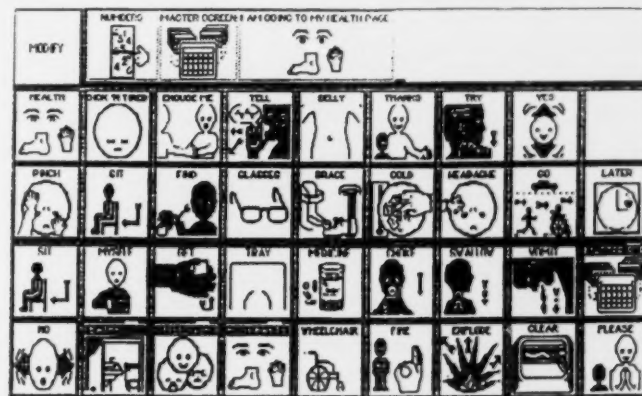


Fig. 9 Health Screen created on the Dynavox^R

We completed the initial introduction to the icons on the 'health screen'. Each location had a spontaneous verbalization as well as an optional delayed message which Shannon could access. I reviewed possible links, stressing the connections to physical ailments and body parts for practice. When I asked Shannon to practice a conversation with me she initiated it with "Something is pinching me". I responded by asking what was pinching her, expecting an article of clothing, seating or related response, as had been reviewed in the introduction. Instead, Shannon made a link to a school page and named 'James' as "what was pinching her". From across the room came James' response: "I am not pinching you. Shannon You lie." Her ecstatic reaction was verification that she had had the desired response to her comment.

On the other hand, this therapist was completely surprised by the conversation that had occurred, and that it had occurred without her

involvement. Shannon's synthesis of new information and use of it across separate, and to the therapist, previously unrelated situations, indicated a level of social and communicative competence in Shannon that was not realized before.

Researchers have documented numerous parameters to determine that one person's perception of another person affects behavior, expectations, interactions, responsibility and independence. Although each person's perception may be different, each does have a real effect on our behavior, our expectations, and the measures of our success. The visible and auditory differences in perceptions of nonverbal and physically challenged individuals magnify the significance of their self-concept, as it does for the individual in this study. "In several studies investigating the relationship of performance on the Piers-Harris Children's Self-Concept Scale to teacher and peer ratings... some significant relationships have been found. The amount of agreement appears to depend on the situation" (Powell, 1948; Ullman, 1952, as cited in Piers, 1984, p.57).

When they began to fill out the Piers-Harris Inventory Shannon's peers expressed concern, explaining that they had not participated in that type of activity before. Each of their questions was answered. Students were reassured that their anonymous participation would not affect Shannon. Directions stressed that there were no right or wrong answers. Some students questioned how they would 'know' the answers, having limited previous experience with Shannon. Told their responses should reflect their feelings, which only they knew, students were then able to complete the survey.

From the beginning of the study to its conclusion, Shannon's overall perception of herself changed significantly. It became more like the peer and staff perceptions. Initially, her ratings of the behavior and anxiety dimensions indicated a low self-concept, called vulnerabilities in the Piers-Harris test manual. Her rating of her physical appearance indicated a very high concept, called an area of strength in that manual. In a visual comparison to others' perceptions of those dimensions, the differences in Shannon's perceptions are quantifiable (Refer to Fig. 4, p.32).

In direct contrast, at the end of the study, none of the dimensions of Shannon's self-concept were significantly different from others' perceptions of her. This reflects a normalizing of Shannon's image of herself. Although she continued to rate her behavior and anxiety as low, and her appearance as high, at the end of the study those scores fell within the established norms, as defined in the Piers-Harris manual. Shannon rated her intelligence two points lower than she had at the beginning of the study. But, she ranked her perception of her own popularity and happiness as high.

"Self-concept is not a unitary dimension. Children... may view themselves quite differently across different areas" (Piers, 1984, p.38). It is not possible to say what impact the use of visual media had in the changes in Shannon's self-concept. It is reasonable to say that Shannon's use of visual media contributed to the change. The differences in Shannon's perceptions of herself reflect the changes she experienced in her communications with others, as well as the changes she experienced in communications within herself.

We don't 'teach perceptions' directly. We use them to measure the effects of our behaviors and to reflect on those effects. The perceptions of the different groups may also reflect the level of interactions which people in those groups have with Shannon. The contrast of the perceptions of the female and male family members graphically reflects observations by this examiner. Shannon reported numerous interactions with the female members of her family in a wide variety of activities throughout the study. Their perceptions of her are described as 'above average'.

While showing a segment of videotaping made at home, Shannon relayed that this was the first time she had gotten her father 'to come to school' with her. Similarly, when Shannon made a phone call to her home and asked to speak to their mother, her 16 year old brother, Ryan, did not respond to her verbally. He hung up the phone. Both Ryan and their father rated their perceptions of Shannon as 'below average'. What effect does the level of interaction have on one's perception of someone else? Why did Shannon's concept of herself most closely resemble the perceptions of her male family members? Does the 'average' perception of her peers and staff members reflect their interactions with her?

When creating the Communication Checklists the level of resistance from staff and family had not been anticipated. The defensiveness by the staff apparently reflected their fears of personal weakness in relating communications with a language-based medium. However, what had appeared to this examiner to reflect staff frustration, were requests for clarification or assistance in understanding and in responding appropriately during interactions with Shannon.

Without exception, prior to submitting each checklist, staff discussed it with this author. Initially, the discussions took place before the staff member would write out the checklists. Later in the study, some staff members completed them without prior consultation, but returned the checklists with verbal or written explanations. The one staff member who completed the checklists after the school year was completed, did not get beyond the initial uncomfortable reaction, thereby, yielding much less information than the others. Differences in participation or timing such as this could negatively affect results in a similar study.

The educated staff members and the aide devoted their time and themselves professionally to participation in this study. They are involved in the education process and use verbal and written language daily. If for them, the use of language-based checklists was confusing, needed clarification, and required requests for assistance, what might it be for others who would not choose to participate in such a study, or who do not use verbal language and/or written text daily?

Multiple intelligences are not only for the physically and verbally different. According to the researchers we experience changes in our perceptions of reality, our behavior, expectations, interactions, responsibility and independence through our styles of learning, our strengths, the literacies with which we are comfortable, and our own measurements of success (Armstrong, 1993).

Without the use of an individual's real cognitive strengths, what do the current measures of academic success really mean? For Shannon, it implies a significantly diminished level of measured cognition, limited real academic and/or social interactions with people, success measured by her weaker areas of

interaction, undeveloped strengths in areas of higher cognitive functioning, increased dependency, and untold effects on her future independence. Behaviors, expectations, interactions, responsibilities and independence appear to be more closely related to the level of involvement with different areas of cognitive strength than previously thought.

It appears that personal and social development, as well as intrapersonal and interpersonal communications of self-image may be changed through the use of visual media for some individuals. As different types of visual media have different effects, dependent upon the interaction of individuals with each medium, does access to different areas of cognitive strength have different effects, dependent upon the interaction individuals have with each area?

Learning, from a different perspective, is a highly personal matter. For Shannon, allowing her to use a spatial medium, apparently created a connection to an area of her cognitive strength. With that connection, she demonstrated significant changes in her perception of herself. Staff members, with their ongoing expectations of higher levels of cognitive interaction from Shannon, demonstrate to this examiner a professional realization of the validity of this connection.

A difference that cannot be measured quantitatively is Shannon's increased engagement as she realized the impact of each medium. The excitement when she 'brought her father to school' on videotape for the first time in her life, was new. She had to explain her excitement to the staff, since they were unaware of it. The strength of her communication during the emergence of her preference to be with peers ('cleaning lockers' and perhaps 'doing anything') rather than to be with an adult, was at first confusing, then thought provoking, and even today, stimulating.

Also this author cannot measure the degree of her resentment when a medium Shannon used successfully (in whatever capacity she interpreted that) was removed from her access. I could feel it. Others watched it, misunderstood it, and initially doubted my statements about it. But in the time since those interactions, Shannon has communicated the anger she felt towards this author to others, including her mother, classroom teacher, and the aide who works with her.

From Shannon's perspective, this author is the one responsible for those communication systems, and therefore, responsible for her access to them.

We learned that access to visual media makes a significant difference to Shannon's ability to communicate. She preferred some to others. Her access to the control of the medium is important to her. For Shannon the interactive nature of the visuals on the Dynavox^R appeared to engage her cognitively, as if they represented the same sort of activity visually as she experiences mentally. This may be one means of accessing visual literacy. Consideration of cognitive strength, learning style and preference are significant in the selection of an augmentative communication device.

We also learned that Shannon's self-concept was initially more like her Father's and her brother's perspectives of her. She changed her perception of herself during the study, to be within average range, more like her peers' perceptions and the staff members' perceptions of her. Shannon's access to visual media contributed to the change.

We learned that visual media can facilitate documentation of communication levels with the SDS analysis model. Without such documentation, Shannon's communications and behaviors were misinterpreted. Shannon consistently communicated at a variety of cognitive levels when areas of cognitive strength were accessible to her. She also chose to reject access to an area of cognitive strength, and made choices based on social preference. Accessibility and independence affected her choices.

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"THE WAY I FEEL ABOUT MYSELF"

55

The Piers-Harris Children's Self-Concept Scale

Ellen V. Piers, Ph.D. and Dale B. Harris, Ph.D.

Published by



Name: _____ Today's Date: _____

Age: _____ Sex (circle one): Girl Boy Grade: _____

School: _____ Teacher's Name (optional): _____

Directions: Here are a set of statements that tell how some people feel about themselves. Read each statement and decide whether or not it describes the way you feel about yourself. If it is *true* or *mostly true* for you, circle the word "yes" next to the statement. If it is *false* or *mostly false* for you, circle the word "no." Answer every question, even if some are hard to decide. Do not circle both "yes" and "no" for the same statement.

Remember that there are no right or wrong answers. Only you can tell us how you feel about yourself, so we hope you will mark the way you really feel inside.

TOTAL SCORE: Raw Score _____ Percentile _____ Stanine _____

CLUSTERS: I _____ II _____ III _____ IV _____ V _____ VI _____

BEST COPY AVAILABLE

1. My classmates make fun of me yes no
2. I am a happy person yes no
3. It is hard for me to make friends yes no
4. I am often sad yes no
5. I am smart yes no
6. I am shy yes no
7. I get nervous when the teacher calls on me yes no
8. My looks bother me yes no
9. When I grow up, I will be an important person yes no
10. I get worried when we have tests in school yes no
11. I am unpopular yes no
12. I am well behaved in school yes no
13. It is usually my fault when something goes wrong yes no
14. I cause trouble to my family yes no
15. I am strong yes no
16. I have good ideas yes no
17. I am an important member of my family yes no
18. I usually want my own way yes no
19. I am good at making things with my hands yes no
20. I give up easily yes no

21. I am good in my school work yes no
22. I do many bad things yes no
23. I can draw well yes no
24. I am good in music yes no
25. I behave badly at home yes no
26. I am slow in finishing my school work yes no
27. I am an important member of my class yes no
28. I am nervous yes no
29. I have pretty eyes yes no
30. I can give a good report in front of the class yes no
31. In school I am a dreamer yes no
32. I pick on my brother(s) and sister(s) yes no
33. My friends like my ideas yes no
34. I often get into trouble yes no
35. I am obedient at home yes no
36. I am lucky yes no
37. I worry a lot yes no
38. My parents expect too much of me yes no
39. I like being the way I am yes no
40. I feel left out of things yes no

41. I have nice hair yes no
42. I often volunteer in school yes no
43. I wish I were different yes no
44. I sleep well at night yes no
45. I hate school yes no
46. I am among the last to be chosen for games yes no
47. I am sick a lot yes no
48. I am often mean to other people yes no
49. My classmates in school think I have good ideas yes no
50. I am unhappy yes no
51. I have many friends yes no
52. I am cheerful yes no
53. I am dumb about most things yes no
54. I am good-looking yes no
55. I have lots of pep yes no
56. I get into a lot of fights yes no
57. I am popular with boys yes no
58. People pick on me yes no
59. My family is disappointed in me yes no
60. I have a pleasant face yes no

61. When I try to make something, everything seems to go wrong yes no
62. I am picked on at home yes no
63. I am a leader in games and sports yes no
64. I am clumsy yes no
65. In games and sports, I watch instead of play yes no
66. I forget what I learn yes no
67. I am easy to get along with yes no
68. I lose my temper easily yes no
69. I am popular with girls yes no
70. I am a good reader yes no
71. I would rather work alone than with a group yes no
72. I like my brother (sister) yes no
73. I have a good figure yes no
74. I am often afraid yes no
75. I am always dropping or breaking things yes no
76. I can be trusted yes no
77. I am different from other people yes no
78. I think bad thoughts yes no
79. I cry easily yes no
80. I am a good person yes no

Communication Checklist

by _____ Date _____

with Shannon Peck

I plan to fill out a checklist during _____ times/week.

1. I spoke with Shannon... (check the appropriate situation)

- | | | |
|--|--|---|
| ☐ classroom | ☐ computer lab | ☐ one-to one work time |
| ☐ Team Time | ☐ peer Activity | ☐ lunchroom |
| ☐ at home | ☐ family activity | ☐ shopping |
| ☐ on the way... (in the car, bus, hallway etc.) | ☐ other _____ | |

2. In your own words ... (what did Shannon communicate?)

3. We talked about... (general topic of the conversation)

- | | |
|---|--|
| ☐ people [peers, family, teachers] | ☐ news, plans |
| ☐ activities | ☐ feelings, problems |
| ☐ assignments, work | ☐ I'm not quite sure. |
| ☐ home | ☐ other _____ |

4. Mode of communications used:

- ☐ verbal [communication device]
- ☐ sign, gestures
- ☐ facial, body expressions
- ☐ acting out
- ☐ pictures, visuals

5. Ways you clarified &/or verified your understanding:

- ☐ by talking directly with Shannon
- ☐ through an interpreter
- ☐ yes/no questions
- ☐ someone else [family, staff, peer]
- ☐ notebook/handout

Your comments, concerns, questions, problems:

Norris & Hoffman's S-D-S Contexts

SITUATIONAL CONTEXT (cognitive organization, perspective)

Includes: contextualized, levels I - V, and decontextualized, levels VI - X

LEVELS OF COGNITIVE ORGANIZATION

Level X (Logical) - hypothetical, mental objects, abstractions, principles

Level IX (Symbolic) - linguistically created, possible event

Level VIII (Relational) - relationships within event, scripts, schema

Level VII (Decentered) - recreate event perspective of observer

Level VI (Egocentered) - recreate event perspective of participant

Level V (Logical) - representation, logical reasoning, concrete

Level IV (Symbolic) - substituted objects, real functions

Level III (Relational) - relational actions, real functions

Level II (Decentered) - sensori-motor exploration, discovery

Level I (Egocentered) - sensori-motor stimulation, own body

DISCOURSE CONTEXT (function of the communication)

Includes: narrative, poetic, or dramatic episodic information, factual, or personal

LEVELS OF STRUCTURE

Level VIII (Interactive Structure) - multiple plots or topics, reciprocal, integrated

Level VII (Complex Structure) - Separate subtopics/episode, each complete

Level VI (Complete Structure) - overall moral or objective, all elements

Level V (Abbreviated Structure) - plans, intents incomplete, most elements

Level IV (Reactive Sequence) - cause effect, no intent/plan, logical order

Level III (Ordered Sequence) - temporal order, no causality, arbitrary

Level II (Descriptive List) - topic related, no unifying temporal frame

Level I (Collection) - associations, no structure, change topics

SEMANTIC CONTEXT (meaning, reference)

Includes: experiential and erudite

LEVEL OF SEMANTIC COMPLEXITY

Level VII (Metalinguage) - knowledge of linguistic properties, separate from meaning, function

Level VI (Evaluation) - response to/reflection on event, judgment/value, significance

Level V (Inference) - meaning beyond what's stated, meaning not present or suggested

Level IV (Interpretation) - meaning not explicit but suggested in cues, goals, states

Level III (Description) - unify objects, events, agents, characteristic qualities, explicit

Level II (Labelling) - name wholes, parts of wholes, categories, sensory input

Level I (Indication) - nonlinguistic, meaning known in context

Resource: Janet Norris, Ph.D. & Paul Hoffman, Ph.D., 1993, Whole Language Intervention for School-Age Children, Singular Publishing Group, San Diego.

Piers-Harris Children's Self-Concept Scale

Ellen V. Piers, Ph.D. and Dale B. Harris, Ph.D.

Third Party Revised Format

Mary T. Gehm

August 16, 1995

Name: _____ Date: _____

Age: _____ sex (circle one): female male Grade: _____

School: _____ Teacher's Name: _____

Directions: Here are a set of statements that tell how some people feel about themselves. Read each statement and decide whether or not it describes the way you feel about Shannon. If it is *true or mostly true* for you, circle the word "yes" next to the statement. If it is *false or mostly false* for you, circle the word "no." Answer each question, even if some are hard to decide. Do not circle both "yes" and "no" for the same statement.

Remember that there are no right or wrong answers. Only you can tell us how you feel about Shannon, so we hope you will mark the way you really feel inside.

Total Score: Raw Score _____ Percentile _____ Stanine _____

Clusters: I _____ II _____ III _____ IV _____ V _____ VI _____

Circle 'yes' or 'no' to answer the following questions about _____
 subject's name

1. Do classmates make fun of her/him? yes no
2. Is he/she a happy person? yes no
3. Is it hard for him/her to make friends? yes no
4. Is he/she often sad? yes no
5. Is he/she smart? yes no
6. Is he/she shy? yes no
7. Does she get nervous when the teacher calls on him/her? yes no
8. Do her looks bother her? yes no
9. When he/she grows up, will he/she be an important person? yes no
10. Does he/she get worried when he/she has tests in school? yes no
11. Is he/she unpopular? yes no
12. Is he/she well behaved in school? yes no
13. Is it usually his/her fault when something goes wrong? yes no
14. Does he/she cause trouble to her family? yes no
15. Is he/she strong? yes no
16. Does he/she have good ideas? yes no
17. Is he/she an important member of her family? yes no
18. Does he/she usually want his/her own way? yes no
19. Is he/she is good at making things with his/her hands? yes no
20. Does he/she give up easily? yes no

21. Is he/she good in his/her school work? yes no
22. Does he/she do many bad things? yes no
23. Can he/she draw well? yes no
24. Is he/she good in music? yes no
25. Does he/she behave badly at home? yes no
26. Is he/she slow at finishing her school work? yes no
27. Is he/she an important member of his/her class? yes no
28. Is he/she nervous? yes no
29. Does he/she have pretty eyes? yes no
30. Can he/she give a good report in front of class? yes no
31. In school is he/she a dreamer? yes no
32. Does he/she pick on his/her brother(s) and sister(s)? yes no
33. Do his/her friends like his/her ideas? yes no
34. Does he/she often get into trouble? yes no
35. Is he/she obedient at home? yes no
36. Is he/she lucky? yes no
37. Does he/she worry a lot? yes no
38. Do his/her parents expect too much of him/her? yes no
39. Does he/she like being the way he/she is? yes no
40. Does he/she feel left out of things? yes no

41. He/she has nice hair. yes no
42. He/she often volunteers in school. yes no
43. He/she wishes he/she were different. yes no
44. He/she sleeps well at night. yes no
45. He/she hates school. yes no
46. He/she is among the last to be chosen for games. yes no
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78. He/she thinks bad thoughts. yes no
79. He/she cries easily. yes no
80. He/she is a good person. yes no